REMARKS

Claim Objection

The Examiner has objected to Claim 86 for being unclear. Particularly, the Examiner states "claim 86 is objected to because the claim reads on a ubiquitin fusion protein comprising 'ubiquitin to two of more non-contiguous ...'. The Examiner suggests amending the claim to read 'two or more ...'." The Applicant has amended the claim as suggest by the Examiner.

The Examiner has objected to Claim 86 for a minor spelling error. Particularly, the Examiner states "part (a, iii) recites 'at fusion sites selected *form* the groups consisting of ...'. The Examiner has interpreted this to mean '... at fusion site selected *from* the groups ...'." The Applicants have amended the claim as suggested by the Examiner.

Rejection Under 35 USC § 112, second paragraph: rejections necessitated by amendment

The Examiner has rejected Claim 86 for having insufficient antecedent basis for the phrase "... fused to ubiquitin at the N-terminal of the heat shock protein" (a, iv). The Applicants have amended the claim to recite "the ubiquitin protein" instead of "the heat shock protein," thereby giving the claim sufficient antecedent basis. In view of the amended claim the Applicants request the rejection be withdrawn.

The Examiner has rejected Claim 86 under 35 USC 112, second paragraph as being indefinite. Specifically, the Examiner states:

> "Part a (iii) recites 'a ubiquitin fusion protein comprising ubiquitin fused to a single epitope-containing segment,' and further recites 'the epitope-containing *segments* being fused to the ubiquitin at fusion sites selected from the *groups* consisting of N-terminus and an internal fusion site. The meaning of the phrase 'epitope-containing segments' is unclear because the part a (iii) is drawn to a fusion protein fused to a single epitope-containing segment, and thus the wording of the claim referring to more that one epitope-containing segment is unclear.

The applicants have amended Claim 86, part a (iii) to amend the phrase "epitope-containing segments" to "epitope containing segment." In view of the claim amendment the Applicants request the rejection be withdrawn.

Additionally, the Examiner states:

> part a (iii) also refers to "fusion sites selected from the groups", while the claim only contains a single group from which to select fusion sites, and thus the meaning of the wording referring to more that one group is unclear.

The applicants have amended Claim 86, part a (iii) to amend the phrase "fusion site selected form the groups" to "fusion sites selected from the group." In view of the claim amendment the Applicants request the rejection be withdrawn.

The Examiner has rejected Claim 86 for a lack of antecedent basis in part (a, iv). Specifically, the Examiner states:

> Claim 86 (a, iv) recites the limitation "wherein one or more epitopes are recognized by the antibody to be detected." There is insufficient antecedent basis for this limitation basis for this limitation in the claim because it is not clear if the antibody of the claimed method is to detect one or more epitopes from parts I – iv, or just part iv.

The Applicants have amended Claim 86 to read "wherein one or more epitopes of steps (a)(i) – (a)(iv) are recognized by the antibody to be detected," to provide the proper antecedent basis In view of the claim amendment the Applicants request the rejection be withdrawn.

Rejection Under 35 USC § 102(b)

Claim 86 is rejected under 35 USC § 102(b) as being anticipated by Vannier, *et al.* Vannier teaches an ELISA method for identifying antibodies from experimental samples using an ubiquitin-hFSHR fusion protein. The Examiner states "Vannier, *et al.*, does not explicitly teach an ubiquitin fusion protein meeting the limitations of the recited claim, it would be expected that the ubiquitin-FSHR protein taught by Vannier, *et al.*, would inherently meet at least one of these limitations."

The Applicants respectfully disagree that the reference cited by the Examiner inherently anticipates the present invention. The standards for finding a claimed invention inherently anticipated are:

> The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). MPEP 2112 (IV).

and,

> "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) (emphasis added). MPEP 2112 (IV).

However, the Examiner in the instant case states, "...it would be expected that the ubiquitin-FSHR protein taught by Vannier, *et al.*, would inherently meet at least one of these limitations." Office Action mailed 07/11/2006, page 6. And,

> Vannier, *et al.*, is a recombinant protein, and FSHR would be expected to be comprised of two or more epitope-containing segments ... with each epitope-containing segment comprising one or more identical or non-identical epitopes. Alternatively, the fusion protein taught by Vannier, *et al.*, could also be considered to be a fusion protein *comprising* a single epitope ... with said epitope further comprising two or more identical or non-identical epitopes. Office Action mailed 07/11/2006, page 6.

In other words, since the Examiner is guessing as to what epitope-containing segments the fusion protein of Loosfelt, *et al.*, contains, the Examiner has not made it clear that the "missing descriptive matter is necessarily present in the thing described in the reference." He has only suggested "the mere fact that a certain thing may result from a given set of circumstances." As we learn above in *In re Robertson*, this "is not sufficient" for an inherency rejection.

However, and solely to advance their business interests while maintaining the right to prosecute the same or similar claims in the future, the Applicants have amended part (a)(ii) of the pending claim. The amended claim has two limitations not taught by Vannier, *et al.* First, the amended claim, parts (a)(i) and (a)(ii), is limited towards ubiquitin fusion proteins having two or more identical epitopes wherein the two or more identical epitopes are located on one or more epitope containing segments. It is highly unlikely that the FSHR protein of the fusion protein taught by Vannier, *et al.*, comprises identical epitopes and certainly does not contain identical epitopes on non-contiguous epitope-containing segments. Vannier, *et al.*, does not

teach the construction of fusion peptides with two or more continuous or non-continuous identical epitopes. In order for the FSHR peptide to have naturally occurring identical epitopes it would have to have redundant secondary peptide sequences so that identical tertiary peptide structures (epitopes) could form. It does not. However, if the Examiner has extrinsic evidence that makes it "clear that the missing descriptive matter is necessarily present in the thing described in the reference" he is encouraged to present it.

Second, parts (a)(iii) and (a)(iv) of the amended claim are limited towards fusion proteins wherein the fusion site is selected from one of three sites: 1) the C-terminus wherein said fusion site is non-cleavable, 2) the N-terminus and, 3) an internal fusion site. The fusion sites for the fusion proteins of Vannier, et al., are located at the C-terminus and are cleavable. Thus, Vannier, *et al.*, does not teach ubiquitin fusion proteins having a fusion site at any of the sites claimed by the amended claim of the present invention.

In view of the amendments to the claim the Applicants respectfully request that the pending rejection be withdrawn.

Rejection Under 35 USC § 102(b)

Claim 86 is rejected under 35 USC § 102(b) as being anticipated by Loosfelt, *et al.* Loosfelt teaches an ELISA method for identifying antibodies from experimental samples using an ubiquitin-hTSHR fusion protein. The Examiner states "Loosfelt, *et al.*, does not explicitly teach an ubiquitin fusion protein meeting the limitations of the recited claim, it would be expected that the ubiquitin-TSHR protein taught by Loosfelt, *et al.*, would inherently meet at least one of these limitations."

The Applicants respectfully disagree that the reference cited by the Examiner inherently anticipates the present invention. The standards for finding a claimed invention inherently anticipated are:

> The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). MPEP 2112 (IV).

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However, the Examiner in the instant case states, "...it would be expected that the ubiquitin-TSHR protein taught by Loosfelt, *et al.*, would inherently meet at least one of these limitations." Office Action mailed 07/11/2006, page 6. And,

> Loosfelt, *et al.*, is a recombinant protein, and TSHR would be expected to be comprised of two or more epitope-containing segments ... with each epitope-containing segment comprising one or more identical or non-identical epitopes. Alternatively, the fusion protein taught by Loosfelt, *et al.*, could also be considered to be a fusion protein *comprising* a single epitope ... with said epitope further comprising two or more identical or non-identical epitopes. Office Action mailed 07/11/2006, page 6.

In other words, since the Examiner is guessing as to what epitope-containing segments the fusion protein of Loosfelt, *et al.*, contains, the Examiner has not made it clear that the "missing descriptive matter is necessarily present in the thing described in the reference." He has only suggested "the mere fact that a certain thing may result from a given set of circumstances." As we learn above in *In re Robertson*, this "is not sufficient."

However, and solely to advance their business interests while maintaining the right to prosecute the same or similar claims in the future, the Applicants have amended part (a)(ii) of the pending claim. The amended claim has two limitations not taught by Loosfelt, et al. First, the amended claim is limited towards ubiquitin fusion proteins having two or more identical epitopes wherein the two or more identical epitopes are located on one or more epitope containing segments. It is highly unlikely that the TSHR protein of the fusion protein taught by Loosfelt, *et al.*, comprises identical epitopes and certainly does not contain identical epitopes on non-contiguous epitope-containing segments. Loosfelt, *et al.*, does not teach the construction of fusion peptides with two or more continuous or non-continuous identical epitopes. In order for the TSHR peptide to have naturally occurring identical epitopes it would have to have redundant secondary peptide sequences so that identical tertiary peptide structures (epitopes) could form.

It does not. However, if the Examiner has extrinsic evidence that makes it "clear that the missing descriptive matter is necessarily present in the thing described in the reference" he is encouraged to present it.

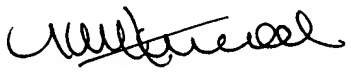
Second, parts (a)(iii) and (a)(iv) of the amended claim are limited towards fusion proteins wherein the fusion site is selected from one of three sites: 1) the C-terminus wherein said fusion site is non-cleavable, 2) the N-terminus and, 3) an internal fusion site. The fusion sites for the fusion proteins of Loosfelt, *et al.*, are located at the C-terminus and are cleavable. Thus, Loosfelt, *et al.*, does not teach ubiquitin fusion proteins having a fusion site at any of the sites claimed by the amended claim of the present invention.

In view of the amendments to the claim the Applicants respectfully request that the pending rejection be withdrawn

Summary

In light of the above amendment, consideration of the subject patent application is respectfully requested. Any deficiency or overpayment should be charged or credited to Deposit Account No. 500282.

Respectfully submitted,



Kevin M. Farrell
Attorney for Applicants
Registration No. 35,505
(603) 433-6300

Portsmouth, NH
Date: 12/11/02

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